

Serial No. 10/029,261  
Amdt Dated: March 8, 2005  
Reply to Office Action of December 13, 2004

Docket No. P-0312

### **REMARKS/ARGUMENTS**

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-28 are pending in the present application. Claims 1, 2, 4, 10, 12, 17, 18, 21 and 23-25 have been amended and claim 14 has been canceled by the present amendment.

In the outstanding Office Action, claims 1-3, 7-11, 14-16, 26 and 27 were rejected under 35 U.S.C. § 102(b) as anticipated by Rideout et al.; claims 4-6, 17-22 and 28 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rideout et al. in view of Applicant's Admitted Prior Art (AAPA) and Bassirat; claim 12 was rejected under 35 U.S.C. § 103(a) as unpatentable over Rideout et al. in view of AAPA; claims 13, 23 and 24 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rideout et al. in view of Bassirat; and claim 25 was rejected under 35 U.S.C. § 103(a) as unpatentable over Rideout et al. in view of Bassirat and AAPA.

The present invention currently includes independent claims 1, 10, 17, 23 and 26. For example, amended independent claim 23 is directed to an optical repeater system including a first optical repeater configured to receive a first radio frequency (RF) analog signal and output a first baseband digital optical signal, a second optical repeater coupled to the first optical repeater and configured to receive a second RF analog signal, convert the second RF analog signal to a first baseband digital electrical signal, delay the first baseband digital

electrical signal, convert the first baseband digital optical signal to a second baseband digital electrical signal, sum the delayed first baseband digital electrical signal and the second baseband digital electrical signal, and convert the summed signal to an output baseband digital optical signal. The system also includes a base station coupled to the second optical repeater and configured to convert the second baseband digital optical signal to a third baseband digital electrical signal and demodulate the output baseband digital electrical signal. Independent claims 1, 10, 17 and 26 include similar features in a varying scope.

In a non-limiting example, Fig. 2 illustrates a second optical repeater 400-N coupled to a first optical repeater 400-1. Further, as shown, the first and second optical repeaters respectively receive a first and second RF analog signal  $Arf\_1(t)$  and  $Arf\_n(t)$ . In addition, the optical repeater sums a baseband digital electrical signal produced from the input RF's analog signal and a converted baseband digital electrical signal from a previous repeater (e.g., the second optical repeater 400-N sums a converted baseband digital electrical signal from the first optical repeater 400-1 and a baseband digital electrical signal corresponding to the second RF analog signal). See also the digital summer 490.

As noted in the background of the related art beginning at paragraph [14], there are various problems in using the optical repeaters of the related art to receive RF signals. For example, RF analog signals received from multiple optical repeaters and summed in the CDMA master base station have different signal transmission loss and delay characteristics

due to differences in the size and temperature of the optical cable connecting the optical repeaters to the CDMA master base station. There is no adequate provision in the related art to adjust transmission signals of respective optical repeaters to provide uniform signal amplitudes. Thus, the combined signal  $Arf_m(t)$  obtains a noise characteristic of the worst optical repeater among N optical repeaters.

The Office Action indicates Rideout et al. teaches a plurality of optical repeaters coupled in series in which each is configured to receive and convert a radio frequency analog signal to a first baseband digital electrical signals, and to sum the first baseband digital electrical signal and a second baseband digital electrical signals transmitted from a previous optical repeater in a series and cites Fig. 4A, col. 7, lines 28-60 and col. 8, lines 47-55. However, it is respectfully noted that the ring structure optical system shown in Figs. 2 and 4 of Rideout et al. include remote units which merely relay a received optical signal via optical fiber 28 to a next remote unit in the ring structure. As shown in Fig. 2, for example, it can be seen that the each of the remote units are not configured to receive and convert a separate RF analog signal to a first baseband digital electrical signal. This is also further illustrated in Fig. 4, for example, in which the remote units only receive and transmit optical signals. The remote units do not receive and convert a separate RF signal to a baseband digital electrical signal. Further, it is respectfully noted Rideout et al. also do not teach or suggest summing a baseband digital electrical signal from a previous repeater with a baseband digital electrical

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signal converted from a received RF analog signal. Bassirat et al. and AAPA also do not teach or suggest the combination of the claimed features.

Accordingly, it is respectfully submitted independent claims 1, 10, 17, 23 and 26 and each of the claims depending therefrom are allowable and the rejections noted in the Office Action have been overcome.

Further, the specification has also been amended to correct minor informalities.

### **CONCLUSION**

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **David A. Bilodeau**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this,

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concurrent and future replies, including extension of time fees, to Deposit Account 16-0607  
and please credit any excess fees to such deposit account.

Respectfully submitted,  
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